

STB-100US

Appln. No.: 09/998,762
Amendment Dated June 23, 2005
Reply to Office Action of February 23, 2005

Remarks/Arguments:

The claimed invention is an ultraviolet sterilization apparatus generally comprising a replaceable lamp cartridge package and a housing. The combination facilitates lamp replacement while avoiding unnecessary handling and contamination. The lamp cartridge package is generally a removable assembly comprising at least one ultraviolet lamp and an envelope, wherein the envelope comprises a jacket with a reflective inner surface, an opening for entry of an air flow, an opening for exit of the air flow, and at least one air-transmitting, ultraviolet-stopping device. The air-transmitting, ultraviolet-stopping device permits the air flow to pass through the lamp cartridge package and out into the housing, but prevents the ultraviolet radiation from exiting the lamp cartridge package. The housing generally comprises an aperture for inserting at least part of the lamp cartridge package, an air propulsion device for generating an air flow and for propelling the air flow through the housing and the lamp cartridge package, an opening for the air flow to enter the housing, and an opening for the air flow to exit the housing. The combination of the housing and the lamp cartridge package forms a closed air passageway through the housing and the envelope.

Claims 1, 3, 6-7, and 8-9 stand rejected under 32 U.S.C. 112, second paragraph, as indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. These claims have been cancelled or amended to remove any alleged indefiniteness, thus obviating the rejection. All claims as presently amended or newly entered are fully compliant with 35 USC §112. Withdrawal of this rejection is respectfully requested.

Claim 7 stands rejected under 35 U.S.C. 112 first paragraph as failing to comply with the enablement requirement. It is respectfully submitted, however, that claim 7 is patentable for the reasons set forth below.

The office action contends that claim 7 is rejected for failure to enable, because "[c]ontainment of an UV source by materials such as plastics, cardboard and wood, as recited in the instant claim, would be inoperable because of the temperatures involved in such containment exceed the combustion and/or melting point of such materials." The office action does not, however, cite any source for such statement.

Instead, it is well known that the low pressure UV-C sources have exactly the same kind of heat-emission as fluorescent tubes, the only difference being that the glass of the UV-C lamps is a special glass which allows the passage of UV radiations. The operating temperature of such tubes is about 40 degrees C (104 °F) which does not exceed the combustion point of cardboard, wood and similar materials, nor does it exceed the melting point of plastics. Further, in Applicant's invention, the tubes are constantly cooled by a continuous air flow.

Accordingly, for the reasons set forth above, the rejection of claim 7 for non-enablement is seen to lack proper foundation. Withdrawal is respectfully requested.

Claim 1 stands rejected under 35 U.S.C. 102(b) as anticipated by Morrow et al. (U.S. Patent Number 5,656,242). Claim 1 further stands rejected under 35 U.S.C. 102(e) as anticipated by Palestro et al. (U.S. Patent Number 6,497,840 B1). Claim 1 also stands rejected under 35 U.S.C. 102(e) as anticipated by Bigelow (U.S. Patent Number 6,500,387 B1). It is respectfully submitted, however, that claim 11, the replacement for claim 1, is patentable over the art of record for the reasons set forth below.

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The Morrow patent is directed to an air purifier device. The Morrow air purifier device comprises ultraviolet lamps, porous filters, an electrostatic filter element, and a blower, "all contained within [a] housing." (See column 2, lines 22-23 of Morrow). The housing further contains openings for inlet and outlet of air, and the housing walls have a reflective inner surface. An embodiment of the invention employs light absorbing baffles to prevent the ultraviolet light from exiting the housing. But the lamp is not contained in a separate removable package and thus the Morrow system is not amendable to the convenient, non-contaminating replacement of the bulb as in applicant's invention.

The Palestro patent is directed to an ultraviolet germicidal system. The Palestro ultraviolet germicidal system contains a light box and a housing. The light box comprises ultraviolet lamps, electrical sockets for the ultraviolet lamps, and openings for entry and exit of air. The housing contains a blower, a dust filter, baffles for preventing the ultraviolet light from exiting the housing, and openings for inlet and outlet of air. But again, Palestro lacks a convenient, removable bulb-containing package facilitating replacement of the bulb with a minimum of bulb handling and contamination.

Similarly, the Bigelow patent is directed to an air actinism chamber apparatus. The office action specifically bases its rejection with respect to Bigelow on the cassette embodiment depicted in Figure 13 of Bigelow. The cassette is described as containing baffling elements for preventing the ultraviolet light from exiting the housing, an aluminum filter having a reflective surface, holes for installation of the ultraviolet bulbs, and a hinged plate "to permit access to the interior of the cassette." (See column 15, line 65 - column 16, line 20 of Bigelow). Further, as the office action points out, the Bigelow air actinism chamber apparatus is designed for use in an already existing HVAC system. Clearly, the bulb replacement procedure in the Bigelow system is to swing up the hinged plate, reach in and replace the bulb, exactly what is avoided in applicant's invention.

As suggested by these comments of the prior art relied upon in rejecting Applicant's prior claims, Applicant's invention, as recited in claim 11 upon which all other claims are dependent, includes features which are neither disclosed nor suggested by the art of record, namely:

a lamp cartridge package comprising at least one ultraviolet lamp and an envelope for housing the at least one ultraviolet lamp, the envelope comprising a jacket with a reflective inner surface, an envelop air inlet opening and an envelop air outlet opening, and at least one air-transmitting, ultraviolet-stopping device adjacent at least one of the two envelop openings and a housing with which the cartridge package is removably combined to form the forced air passageway by which the bulb is cooled.

This means that the ultraviolet light source or sources and the mechanism for preventing the ultraviolet light from exiting the ultraviolet sterilization apparatus are all enclosed within a jacket having a reflective inner surface, forming the lamp cartridge package. The lamp cartridge package is removable from the housing. Hence, in an exemplary embodiment of the invention, all exhaustible components of the ultraviolet sterilization apparatus (i.e. the bulb) are contained within a removable package. Further, the lamp cartridge package is fully enclosed, with the exception of two openings for entry and exit of air. The inner components of the lamp cartridge package are not accessible. This feature is found in the originally filed

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claims and in Applicant's specification at page 8, first full paragraph and page 9, third full paragraph, lines 2-3. No new matter has been added.

The office action suggests that Morrow teaches "an air purifier having a removable UV lamp assembly supported within a housing." As is depicted in Figure 1, however, the UV lamps themselves are accessible for changing via a hinged opening in the housing. (See Fig. 1 and column 4, lines 1-6). Further, Figure 4 shows that an embodiment of the Morrow invention contains a light filter, baffles for preventing the ultraviolet light from exiting the air purifier, and a reflective inner surface surrounding the UV bulbs. (See Fig. 4 and column 4, lines 40-52). Morrow does not, however, suggest that the combination of the UV bulbs, the light filter and the baffles are contained within a removable package having an inner reflective surface.

The office action further suggests that Palestro teaches a "housing having a removable UV lamp cassette therein." Palestro describes the principle elements of the invention as including a housing with an air intake and an air discharge, blowers, and "an ultraviolet light box positioned within the housing." The light box, as clearly shown in Figures 2, 3 and 4, contains the UV light source and a casing for enclosing the UV light source. While Palestro does contain baffling elements for preventing the ultraviolet light from exiting the apparatus, they are not located in the light box. Additionally, the light box is not described as having a reflective inner surface. Moreover, the ultraviolet lights themselves are "accessed for cleaning and replacing through an access door in the front wall of the housing." (See column 8, lines 42-44). Palestro's "light box" therefore is seen to consist of a number of elements, not all of which are combined with the bulb as a removeable package, as required by Applicant's claims.

The office action further suggests that Bigelow teaches an air purifier for HVAC systems, "filter means located at both the inlet and outlet and a cassette means removably supported within the housing which contains a UV source." The Office Action suggests that support for this statement is found, in Bigelow, at column 15, line 65 through column 16, line 20. In these passages, Bigelow discusses a cassette containing a mesh filter, baffling elements for preventing the ultraviolet light from escaping the cassette and the ultraviolet bulbs. This cassette is not described as being removably supported within a housing. Further, as clearly shown in Figures 14A and 14B, the cassette is "hinged . . . to permit access to the interior of the cassette" for removing the ultraviolet bulbs individually.

This is different from Applicant's invention for the following reasons. First, Morrow, Palestro, and Bigelow do not teach an enclosed removable package containing all the exhaustible components, namely, the ultraviolet source, together with the air-transmitting, ultraviolet-stopping device and the reflective inner surface; whereas Applicant's does definitively require this feature. Second, the Morrow, Palestro, and Bigelow air purifiers provide for access to the ultraviolet bulbs themselves; whereas Applicants define a system where this is rendered unnecessary.

It is because Applicant includes the feature of a lamp cartridge package comprising at least one ultraviolet lamp and an envelope for housing the at least one ultraviolet lamp, the envelope comprising a jacket with a reflective inner surface, an envelop air inlet opening and an envelop air outlet opening, and at least one air-transmitting, ultraviolet-stopping device adjacent at least one of the two envelop openings, that the following advantages are achieved. Namely, all of the exhaustible components of the sterilization apparatus can be easily replaced by the consumer. This is possible because, first, all these components are contained within a removable package. The user can easily remove the existing lamp cartridge package and

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replace it with a new one containing fresh components. Second, the lamp cartridge package does not permit access to the components contained within it. Touching the ultraviolet lamps themselves may be dangerous and may cause fingerprints, dirt and sebum to collect on the ultraviolet lamps, impairing their effectiveness (as fully described in applicant's specification.).

Accordingly, for the reasons set forth above, claim 11 is patentable over the art of record.

The remaining claims are all dependent, directly or indirectly on claim 11 and are therefore also all patentable for the same reasons pointed out with respect to claim 11. In addition, the individual claims may include additional limitations, by which they are patentably distinguished from the prior art.

Further, the additional prior art cited in the obviousness rejection of certain claims does not remedy the deficiencies of the primary prior art discussed above.

New claim 14, for example, recites:

at least one air-transmitting ultraviolet-stopping devices being selected from the group consisting of a dark filter and an activated charcoal filter.

The art of record does suggests no such device.

The Mazzilli patent, cited in the rejection of claim 7, suggests only that one end wall of the device is suggested may be made of "hardboard such as fiberglass or equivalent lightweight material." (See Mazzilli column 5, lines 60-64).

By comparison, Applicant's cartridge package jacket, i.e. the entire jacket, is of a lightweight material such as plastic, cardboard or wood so that the removable cartridge package is lightweight and is made from an inexpensive material, thus facilitating disposability of the cartridge package.

Claims 9-10 stand rejected under 35 U.S.C. §103(a) as unpatentable over Morrow as applied to claims 1-2, 4-6 and 8 above, and further in view of Owesen (U.S. Patent Number 5,891,399).

Morrow is distinguishable for the reasons discussed above. The Owesen patent is directed to a cleaning arrangement including filters and ultraviolet radiation. The relevant portion discusses magnetic means for securing closures and an hour counter for measuring and displaying the usable life remaining of the UV lamps.

Applicant's invention is not an obvious combination of Morrow and Owesen. First, as discussed above, Morrow does not disclose a package containing all exhaustible components of the air sterilization apparatus. Hence, adding an hour counter the Morrow invention does not suggest a lamp cartridge package with an hour counter for counting the hours of use remaining for all components therein. Likewise, adding magnetic means for securing closures to the morrow invention does not suggest a lamp cartridge package with magnetic means for securing the lamp cartridge to the housing.

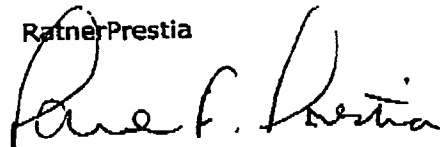
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For all of the reasons set forth above, and in view of the amendments and arguments set forth above, Applicant urges that all claims of the application as newly entered and as amended are in condition for allowance. Early and favorable notification to that effect is earnestly solicited. To facilitate and expedite examination of this application, Applicant's undersigned representative respectfully requests an interview with the Examiner in charge of this application at an early date and invites telephone contact for that purpose or to answer any question the Examiner may have.

Respectfully submitted,

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PFP/nmc

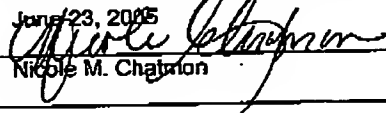
Attachments: Abstract

Dated: June 23, 2005

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June 23, 2005

Nicole M. Chatman

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